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Discussion

Dr D. Adams *(New York, NY).* I learned from Dr Carpentier a long time ago about the importance of archways and tension, and how chordae come into the body of the leaflet creating an arch.

I've always thought that perhaps this is to protect the AL, to serve as sort of a protection against it having too much tension in terms of preventing degeneration, not necessarily just to support the ventricle.

In your results, one thing I'm interested in is understanding the direction of force. You say that you put these back into a position to maintain the normal force and try and create normal tension. But in the pathologic ventricle, as the PMs get displaced, I'm curious what direction you would try and reimplant these.

The second question is just a practical one. How would you set the tension clinically?

I think it's an interesting concept and congratulate you. I'm curious if you could tell us the clinical relevance and how you try and use it.

Dr M. Komeda *(Kyoto, Japan).* I will be answering the questions for Dr Fukuoka.

Dr Adams, thank you for the interesting questions.

About question one, you're right, the direction may change with the dilatation of the LV or dysfunction of the ventricle. In either case, the direction between the papillary tip and the anterior part of the MA is just the same, no matter what the ventricular dimension is. So we believe this method may serve as the proper force direction.

About question two, we briefly mentioned that. We set the tension at 15 g in the diastolic, and then we clamp the distance. In other words, the end-diastolic tension should be 15 g, which is almost the same as the one we reported from Stanford. When I was

working at Stanford for Craig Miller, 10 to 15 g provided the best LV systolic and diastolic function in terms of the valvular–ventricular continuity of tension.

Dr Adams. The question is, do you think the tension that you're measuring with grams increases as the ventricle dilates? I'm sure that's not a steady state. So in the pathologic ventricle, I doubt that 15 g would be enough. How would we sort that out?

Dr Komeda. That's an important issue. In the acute phase, if the PM gets a necrosis, or there was secondary remodeling, things are different. But the distance between the papillary tip and the MA is almost constant regardless of heart rate, contractility, and preload/afterload. So that's why we kept the same distance between the papillary tip and the anterior annulus.